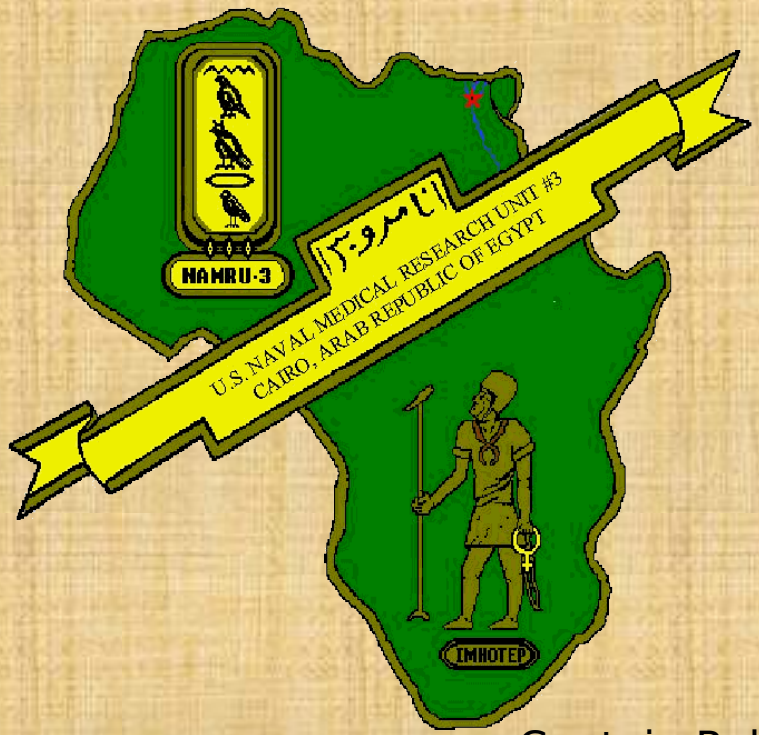
U. S. Naval Medical Research Unit No. 3 Cairo, Egypt



Since 1946, an internationally recognized multi-agency platform for force health protection and global health security

Captain Robin Wilkening
Medical Corps
United States Navy
Commanding Officer

Mission

To study, monitor, and detect emerging and re-emerging disease threats of military and public health importance.

To develop mitigation strategies against these threats in partnership with host nations and international and U.S. agencies in the U.S. Central Command, U. S. European Command, and U.S. Africa Command areas of responsibility.

BUMEDINST 5450.168
12 Jul 2010

Chain of Command

U. S. Navy Bureau of Medicine and Surgery (BUMED)
Washington DC

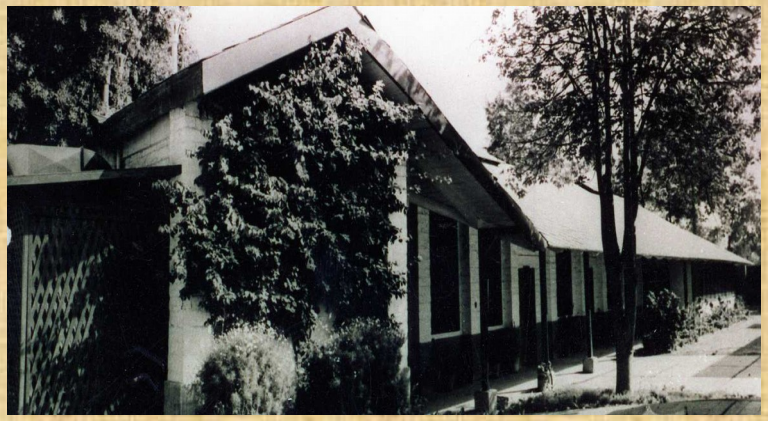
Naval Medical Research Center (NMRC)
Silver Spring MD

NAMRU-3
Cairo

NAMRU-3 in Earlier Years

Entrance to NAMRU-3

Admin Building



Research Labs

Staff

- Cairo
  - 21 Active Duty Navy and Army personnel
  - 8 Department of Defense civilians
  - 153 Egyptian and other Locally Engaged Staff (LES)
  - 106 contractors
- Ghana
  - 1 Active Duty Navy
  - 3 LES
  - 8 contractors
- Afghanistan
  - 6 contractors
- Regionally
  - Contract/sub-contract field site staff located in 20 countries

Current Facilities in Cairo

Administration

Public Works

Medical library and internet cafe

Laboratory building including two BSL-3 labs

NAMRU-3 Activities in AFRICOM, EUCOM and CENTCOM

NAMRU-3 Global Partners

DoD GEIS

MIDRP

CDC

DoS/BEP

DTRA

WHO

AFRICOM

USAID

CENTCOM

NIH

EUCOM

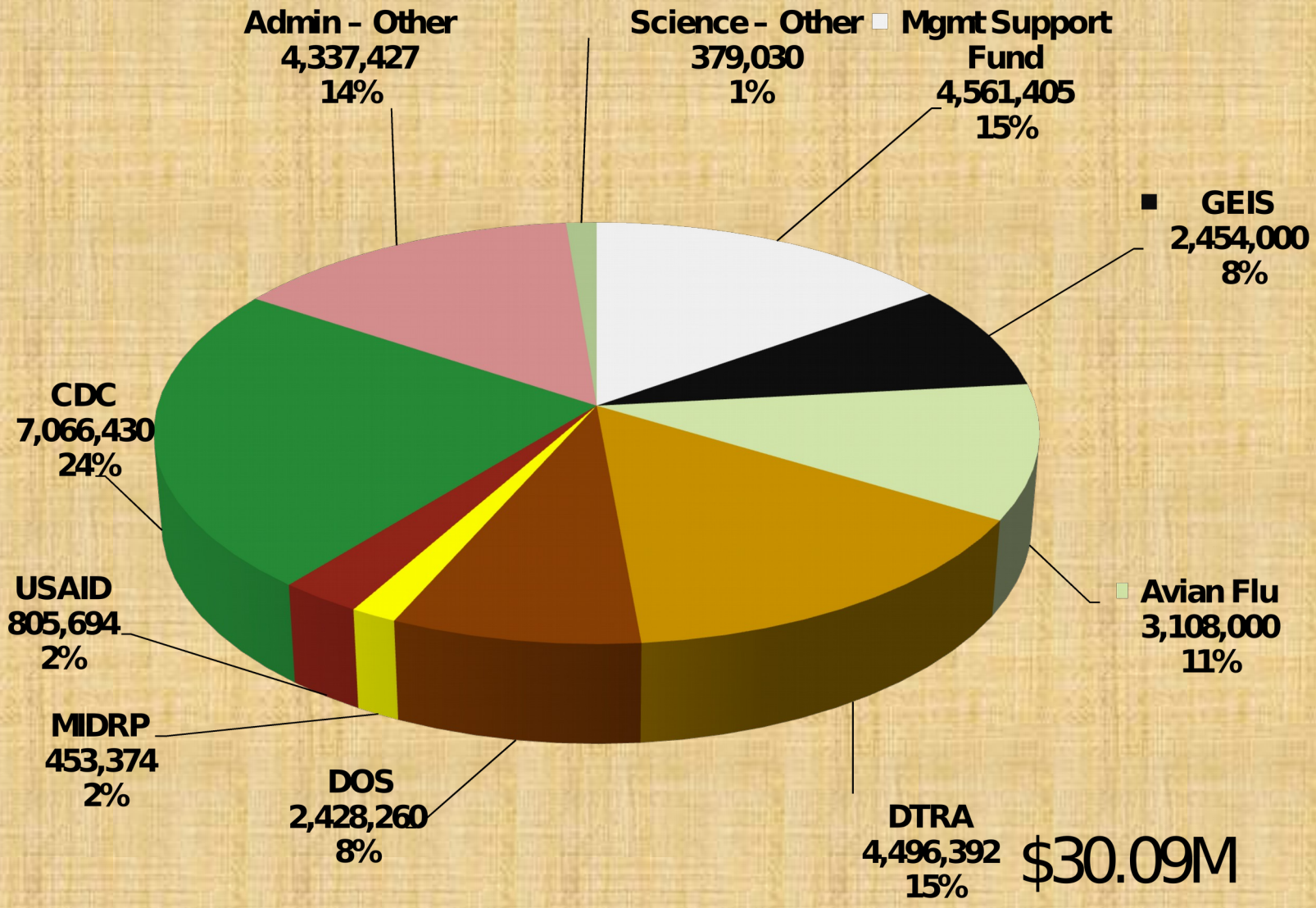
USDA

Ministries of Health

Ford Foundation

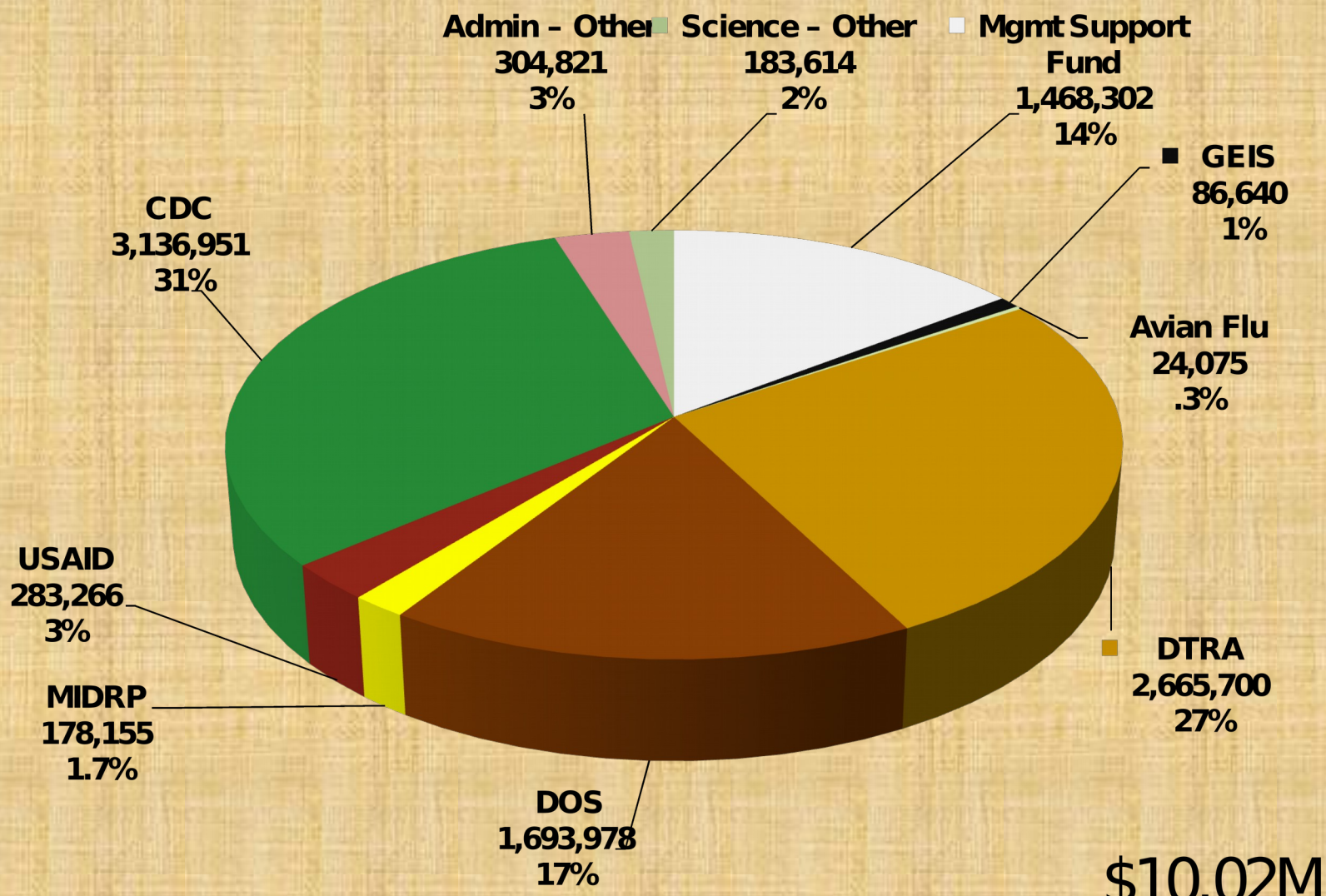
Outbreak response
Disease surveillance
Bench research
Field site development
Cooperation
Innovation
Science engagement
Capacity building
Training
Sustainability

FY 11 Funding



$30.09M

FY 12 Funding as of 30 NOV 2011



$10.02M

Engaging with Host Nations

Establish mutual interests
Discuss activities
Develop proposals
Seek funding sponsor

Initial assessment

Science review board
Ethical review committee(s)
Host nation/partner approval

Research protocol

Training
Enrollment
Data collection
Report/manuscript

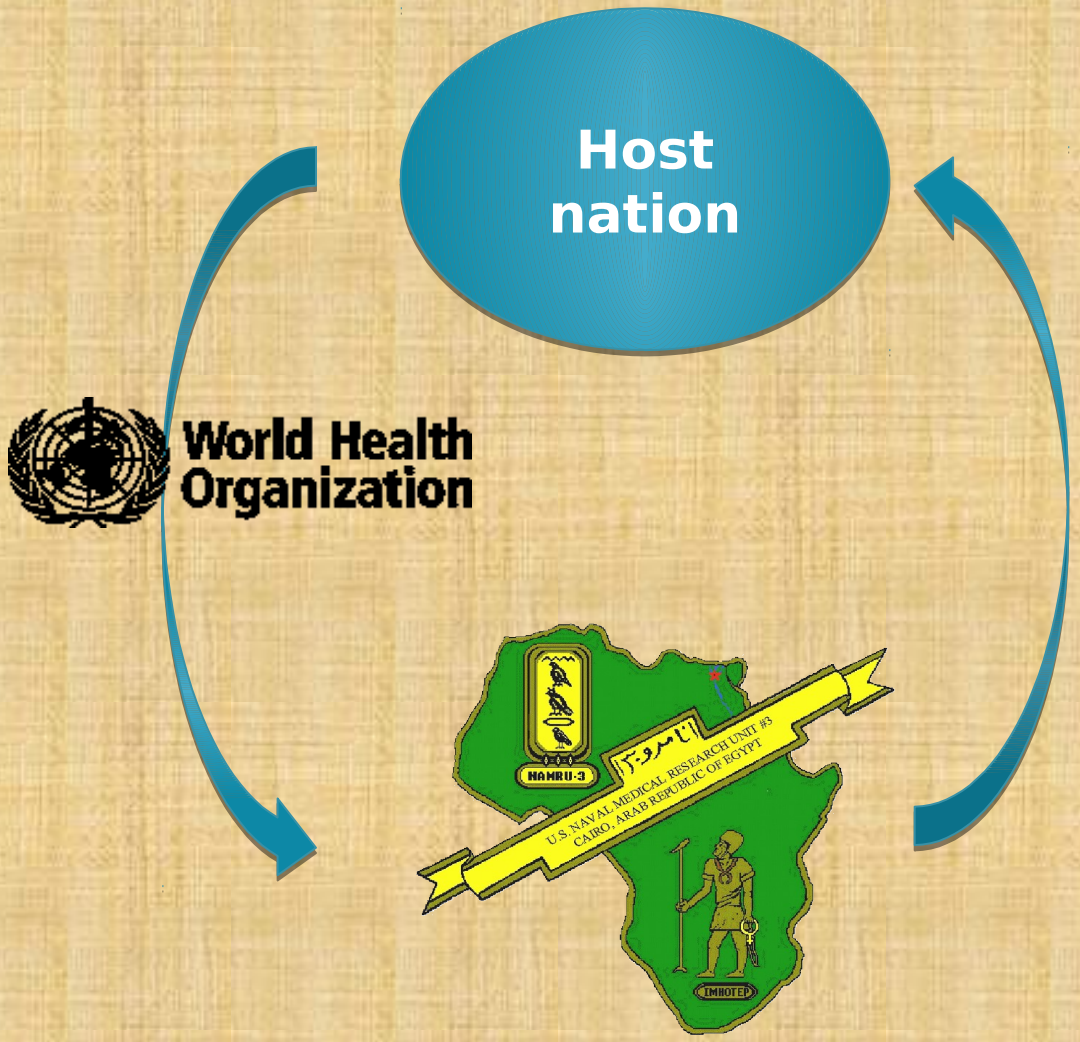
Project execution

Technical support
Outbreak assistance
Conferences/workshops
National/regional networks

Continued partnership

NAMRU-3 and partners

Key Collaboration Model



NAMRU-3 Capabilities

Research Science Directorate

- Bacterial and Parasitic Disease Research Program
- Global Disease Detection and Response Program
- Vector Biology Research Program
- Virology and Zoonotic Disease Research Program
- Ghana Detachment

NAMRU-3 Capabilities (cont'd)

College of American Pathologists (CAP) accredited laboratory

Administrative support

- Travel
- Information Technology
- Disbursing
- Public Works
- Contracting
- Safety and Occupational Health
- Medical Repair

Bacterial and Parasitic Disease Research Program (B&P)

- Camp Lemonnier, Djibouti
  - Current study: diarrhea and influenza-like illness
  - Under development: diarrhea RCT (2012)

- WHO regional reference laboratory for
  - Rotavirus surveillance (EIA and genotyping)
  - Novel viruses (collaborattion with local universities)
  - Major enteric pathogens
  - Malaria diagnostics
    - Microscopy
    - Gene dectection
    - Sero surveys

- Pathogen discovery and advanced characterization Supporting the *E.coli* vaccine project

B&P

- Collaboration, training and reference laboratory for the Egy lth

- Capacity building in partnership with DTRA
  - Afghanistan
  - Djibouti
  - Iraq
  - Pakistan

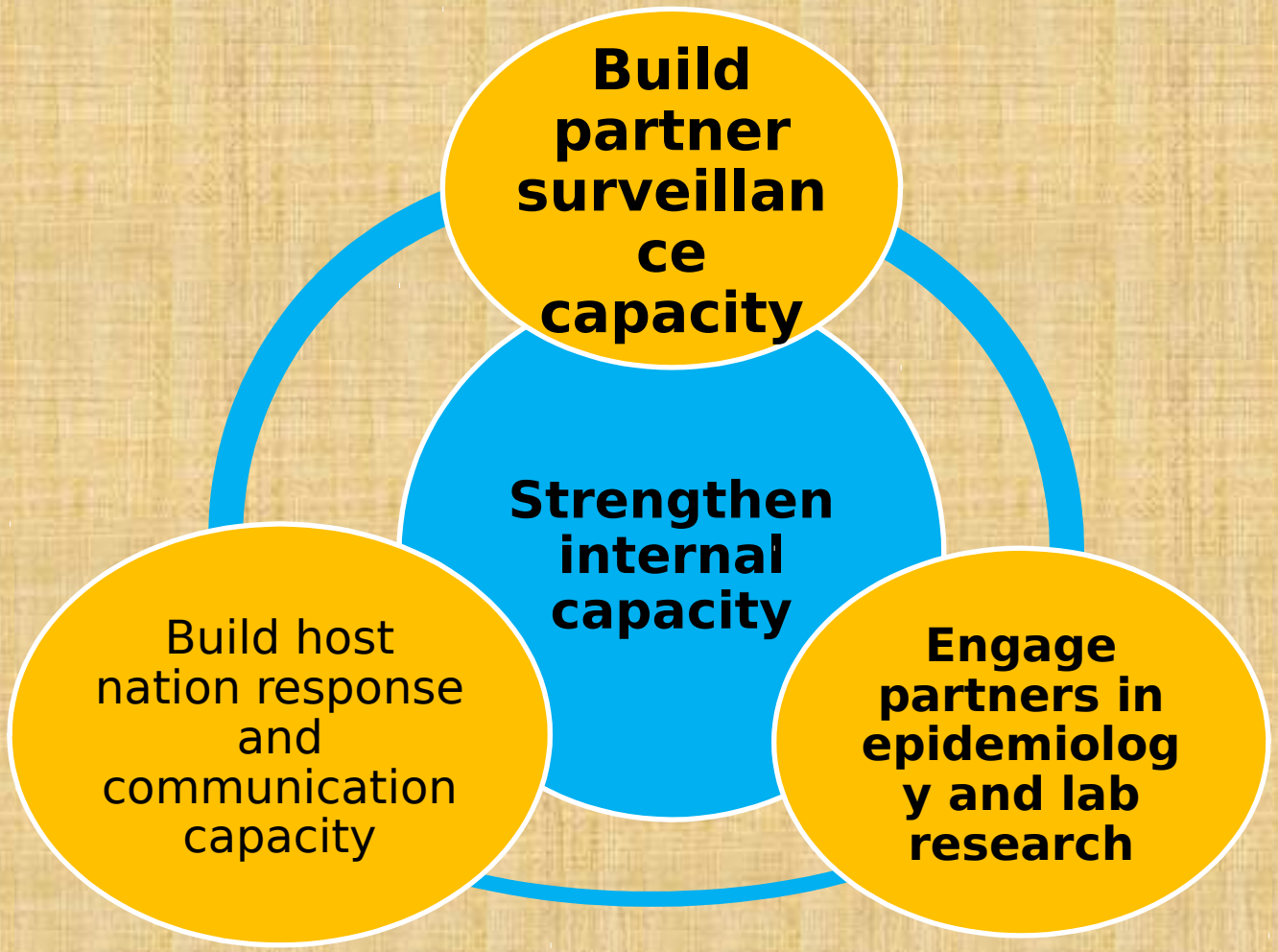
Disease surveillance
Outbreak mitigation
Biosafety and biosecurity

Global Disease Detection and Response Program (GDDRP)

CDC personnel embedded within NAMRU-3

- More than 20 years of collaboration
- One of 8 CDC GDD centers worldwide
- Formalized as NAMRU-3 program in March 2008
- Includes International Emerging Infections Program (IEIP-Egypt), a collaboration established in 2006

GDDRP Goals

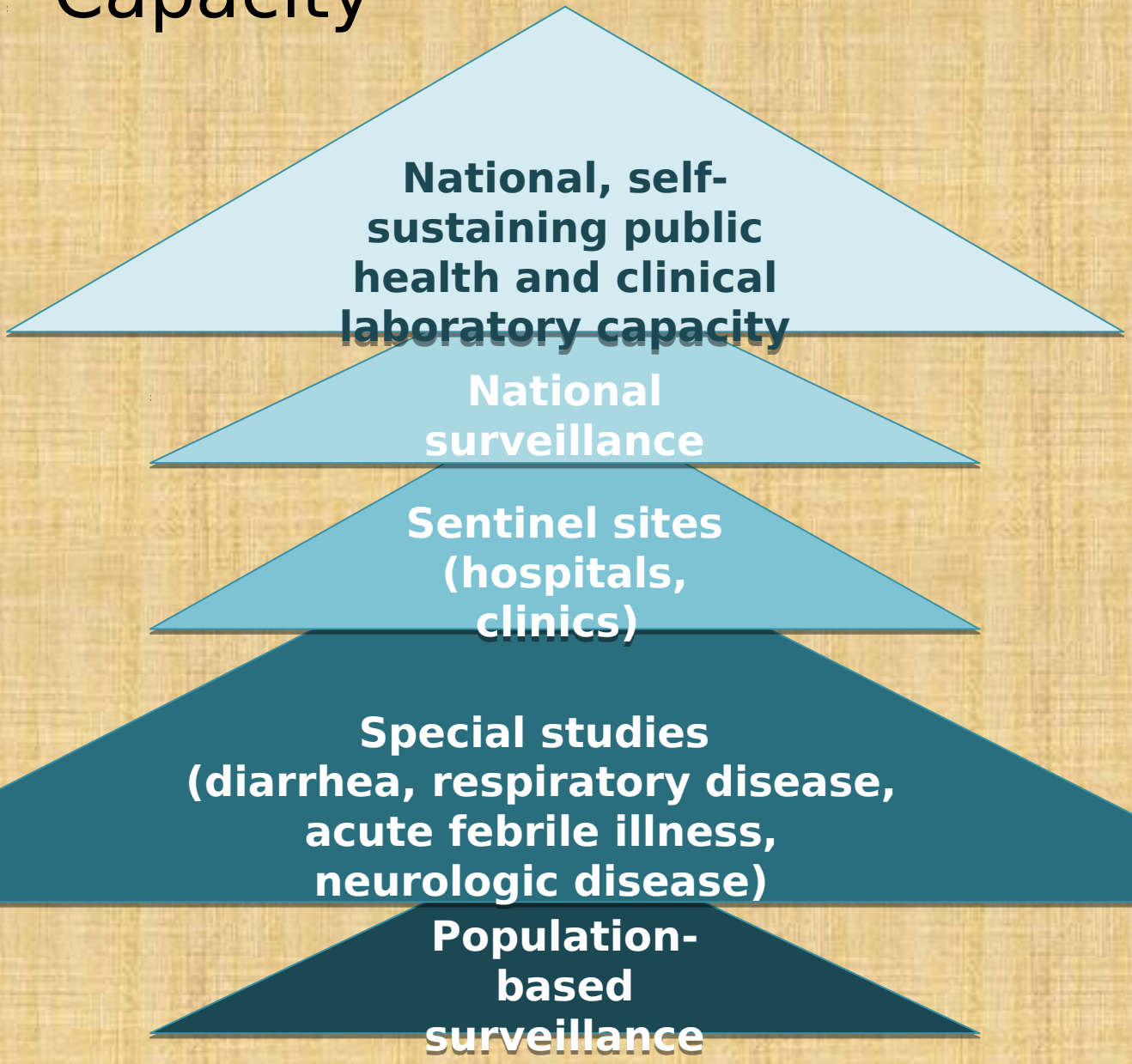

Build partner surveillance capacity
Strengthen internal capacity
Build host nation response and communication capacity
Engage partners in epidemiology and lab research

GDDRP Major Project Areas

More than 90 projects in 11 countries

- Acute febrile illness
- Infection control
- HIV/STI
- TB
- Integrated human animal vector surveillance
- Acute diarrheal illness
- Acute respiratory illness
- Acute infectious neurologic disease
- MoH epidemiologist capacity building
- Training

GDDRP Builds Surveillance Capacity


National, self-sustaining public health and clinical laboratory capacity
National surveillance
Sentinel sites (hospitals, clinics)
Special studies (diarrhea, respiratory disease, acute febrile illness, neurologic disease)
Population-based surveillance

Vector Biology Research Program

Personnel and equipment readily available for extensive field and lab researc

- Sand flies, mosquitoes, ticks
- Pesticide resistance
- Pest control
- Personal protection
- Surveillance methodologies

Vector Biology Field and Lab Training

- Military personnel
- Ministry personnel from Egypt, Libya, Ghana, Sudan, and Liberia
  - Identification of vectors
  - Vector surveillance techniques
  - Specimen processing
  - Biology/ecology of arthropod vecto

Vector's Role in Force Health Protection

Research and testing revolves around FHP

- Equipment for deployed personnel
- Identification and testing of sample
- PPE consultation and training
- Technical assist visits
- Leishmaniasis prevention

Vector Biology Outbreak Response

- Malaria

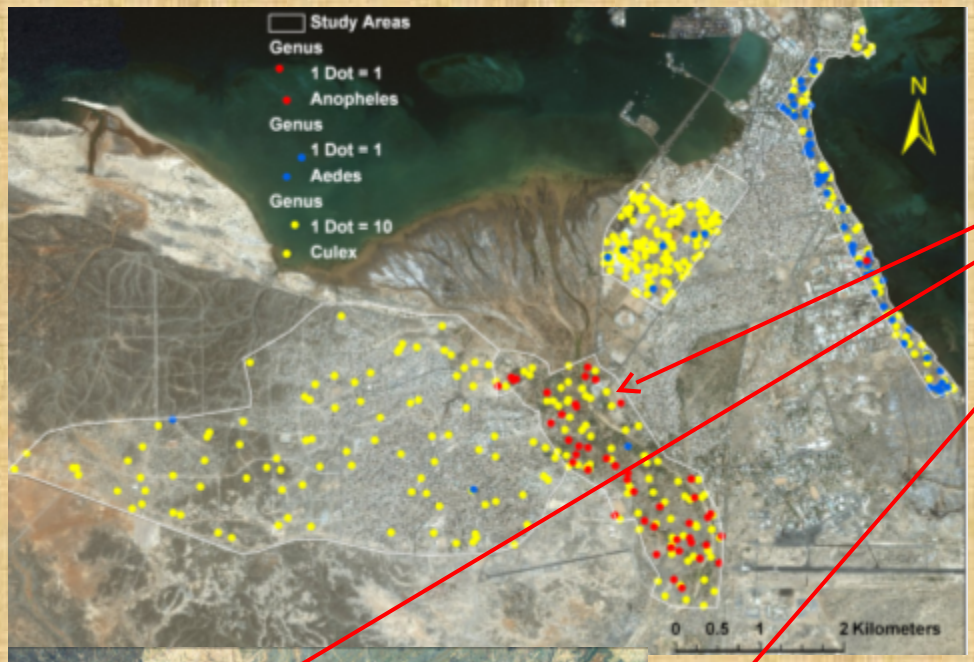
- Leishmaniasis

- Rift Valley Fever

- Dengue Fever

Vector Biology Current Projects

- Efficacy of traps in attracting *Phlebotomus* spp. in **Morocco**
- Characterization of *Leishmania* parasites, hosts/reservoirs, vectors, and drug resistance of parasites
- Distribution of *Anopheles* spp. in **Liberia** using Global Information System and Remote Sensing
- Distribution of *Anopheles* spp. and malaria in **Djibouti**
- Dengue early warning system in **Djibouti**



Malaria vector distribution

Djibouti City

DEN/CHIK vector distribution

Virology and Zoonotic Disease Research Program (VZDRP)

- Biosafety Level 3 (BSL-3) laboratories with a Biological Select Agents and Toxins program

- Arbovirus surveillance (Dengue, Rift Valley Fever, Congo Crimean Hemorrhagic Fever, Chikungunya, tick-borne encephalitis, hantaviruses)

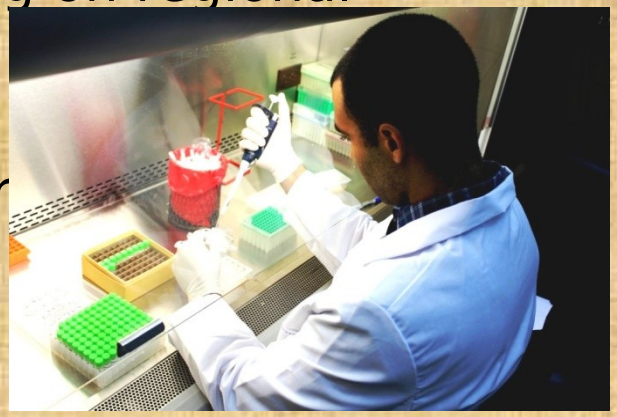
- Outbreak response: 24/7 capability for laboratory

VZDRP

- WHO Collaborating Center for Emerging Infectious Diseases

- Establishment of National Influenza Centers in 12 countries in Middle East, Central Asia, and West Africa
  - Molecular diagnostic techniques for influenza
  - Virus isolation for influenza
  - Quality control/quality assurance testing on regional samples

- Influenza-like illness surveillance r
  - 8 sites in Egypt



Ghana Detachment NAMRU-3 on the West African Coast

- Influenza surveillance with the National Influenza Center
  - SARI at 2 sites
  - ILI at 13 sites
  - Mil-to-mil at 6 sites
- Malaria resistance
- Diarrhea surveillance

Collaboration with Burkina Faso and Cote d'Ivoire

Ghana Detachment

- Phase 1 of double-blinded, placebo-controlled dosage escalation study of the safety and immunogenicity of EBA-174 R-II malaria vaccine
- Characterization of molecular markers of drug resistance of *P. falciparum*
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THANK
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